Clean Version of the Claims as Amended

1. A method of expressing an interferon-alpha polypeptide in a cell by contacting said cell with a recombinant viral vector comprising a nucleic acid segment encoding an interferon-α polypeptide lacking a secretion leader sequence, the nucleic acid segment being operatively linked to a promoter having specificity for the tissue of interest, wherein the interferon-α polypeptide is expressed in active form in the cell.

2. The method of claim 1, wherein the interferon-α polypeptide is interferon-α2b.

3. The method of claim 2, wherein the promoter having specificity for the tissue of interest is a liver-specific promoter.

4. The method of claim 2, wherein the tissue comprises a liver cancer cell.

7. The method of claim 3 wherein the vector is an adenoviral vector.

8. The method of claim 7 wherein the adenoviral vector is replication deficient

9. The method of claim 7 wherein the adenoviral vector is replication competent.

19. A recombinant vector comprising a nucleic acid segment encoding an interferon-α polypeptide, the nucleic acid segment being operatively linked to a promoter specific for a tissue of interest, wherein the nucleic acid segment encoding the interferon-α polypeptide lacks a secretion leader sequence.

20. The vector of claim 19, wherein the interferon-α polypeptide is interferon-α2b.

21. The vector of claim 19, wherein the interferon--α polypeptide is interferon-α2-α1.

22. The vector of claim 19, wherein the interferon-α polypeptide is a consensus interferon-α polypeptide.

23. The vector of claim 20, wherein the promoter is a liver specific promoter.

24. The vector of claim 20, wherein the promoter is the AFP promoter.

25. The vector of claim 24 wherein the vector is an adenoviral vector.

26. The vector of claim 25 wherein the adenoviral vector is replication deficient.

Clean Version of the Claims as Amended (continued)

27. The vector of claim 26 which is rAdNSI-α2b.

28. The vector of claim 25 wherein the adenoviral vector is replication competent.

29. The vector of claim 28 wherein the endogenous adenoviral E1 promoter is replaced with the AFP promoter.

30. A pharmaceutical formulation comprising a recombinant vector comprising a nucleic acid segment encoding an interferon-α polypeptide, the nucleic acid segment being operatively linked to a promoter specific for a tissue of interest, wherein the nucleic acid segment encoding the interferon-α polypeptide lacks a secretion leader sequence.

31. The formulation of claim 30 wherein the interferon-α polypeptide is interferon-α2b.

32. The formulation of claim 31 wherein the vector is an adenoviral vector.

33. The formulation of claim 32 further comprising a delivery enhancing agent.

34. A method of killing a hepatocellular carcinoma cell by contacting said hepatocellular carcinoma cell with a recombinant viral vector comprising a nucleic acid segment encoding an interferon-α polypeptide lacking a secretion leader sequence operatively linked to a liver specific promoter wherein said vector is internalized by said cell and results in the transcription and translation of said nucleic acid segment in said cell thereby producing an increased intracellular concentration of said interferon-α polypeptide in said cell which causes the death of said cell.

36. The method of claim 34 wherein the interferon-α polypeptide is human interferon-α2b.

37. The method of claim 36 wherein the vector is a recombinant adenoviral vector.

38. The method of claim 37 wherein the adenoviral vector is replication deficient.

39. The method of claim 38 wherein the adenoviral vector is rAdNSIα2b.